

A HARNESS forms the vital link between the climber, the rope, and the rest of the protection chain. Beyond this primary purpose, a harness can provide a place to rack gear and serve as a belay seat when required. An understanding of the design, fit, selection, and care of climbing harnesses is crucial to reducing the risks associated with climbing.

HARNESS DESIGN

Climbing harnesses come in three basic designs: diaper style, waistbelt/leg loop combinations, and full body. Diaper style and waistbelt/leg loop style are sometimes called "sit" or "seat" harnesses.

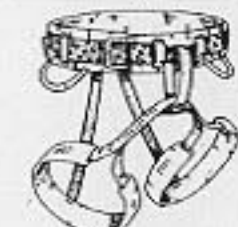
Diaper harnesses have a waistbelt and a webbing loop which is pulled through the crotch from behind to form the leg loops.



Diaper harness.

Diaper harnesses allow the leg loops to adjust several inches, so they may be worn either in winter over thick clothing or in summer with lighter clothing. Most diaper harnesses are further suited for winter and alpine use because the leg loops can be released while the independent waistbelt remains securely tied to the rope. This makes clothing changes or heeding the call of nature easier and safer. Diaper harnesses may or may not have padding.

Harnesses with a waistbelt/leg loop combination are the most common and usually the most comfortable harnesses. They consist of two pieces: a waistbelt with a buckle closure and leg loops. Sometimes leg loops are adjustable. Separate components allow



Waistbelt/leg loop combination.

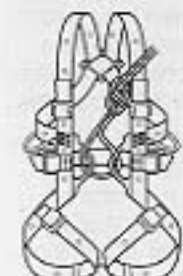
the harness to ride correctly and comfortably allowing both rear and front rises to be adjusted; if waistbelts and leg loops are available separately, they can be sized more precisely to a climber's anatomy. Most waistbelts and leg loops are padded for comfort.

Chest harnesses are good for supplying additional support to a waistbelt/leg loop harness when it is

needed—for example, ascending or rappelling while wearing a pack. They should not be used for leading, as a high tie-in point may lead to whiplash of the spine and/or difficulties breathing while hanging due to constriction of the diaphragm.

Full body harnesses are designed for use with children and anyone whose body shape will not allow a waist harness to

function properly. These harnesses incorporate chest, back and shoulder support to make up for the lack of an anchor point at the hips. Most children need this style harness until age 10. Follow the manufacturer's recommendation for fitting.



Full body harness.

Most harnesses use full-strength buckles to join the waistbelt. Be sure to have a thorough understanding of the manufacturer's recommendation for using the harness and the buckle. If the buckle and the harness are not secured correctly, they can come apart, a potentially fatal occurrence. Most harnesses must be buckled a very specific way in order to be secure. Be certain that you follow the manufacturer's instructions to buckle correctly every time.

Many harnesses simply belaying and rappelling by virtue of having either a belay/rappel loop permanently fixed to the harness, or by allowing you to clip a large locking carabiner through the front portion of the belt and leg loops.



Most buckles require that you double the webbing back through to insure that they hold. Leave at least 3" of "tail" at the end of the webbing.

HARNESS FIT

Even the most carefully designed and cushioned harness won't be comfortable if it is too big or too small, nor will it be secure. If a harness is too tight, it will restrict movement and/or pinch. A loose harness slips, chafes, and, in an inverted fall, the climber could slip out of it.

When fitting your harness wear the clothing in which you intend to climb. If this isn't convenient make sure you empty your pants pockets, remove belts, and untuck shirts or sweaters before trying on a harness. Most specialty climbing shops have a system set up to allow you to safely hang in a harness. Hang in the harness for a few minutes to get a feel for how comfortably it fits.

All harnesses should sit snugly above the hip bones and be impossible to pull down. Be aggressive when trying to pull down the harness and be realistic about your waistline. If you cannot get the harness to stay above your hip bones, use a full body harness until your waistline works with a pelvic style harness. If you cannot keep your harness above your hips, it will not hold you in the event of an inverted fall. Be sure that it is not so tight that it interferes with your breathing. Always follow the manufacturer's recommendations for

securing the buckle and for specific fitting criteria. Fit leg loops snugly, but without binding.

Diaper harnesses usually adjust by several inches in the legs, so fitting the waistbelt is your primary concern. All diaper harnesses buckle at the waist, so follow the above sizing instructions for buckled waistbelts.

Be especially careful when fitting a seat harness. If sized too large these harnesses can slide up onto your lower ribs, compressing your diaphragm and leaving you gasping for air. When worn too small they can compress your hips and legs, reducing mobility. You should have a minimum of one inch and a maximum of two inches between the tie-in loops. When in doubt, err on the small side, but be sure there are 3-4 inches of webbing extending past the buckle when it is properly secured. Just like clothing, some harness brands fit certain body styles better than others, so be sure to find the right one.



A properly fitted harness.

HARNESS SELECTION

Multipurpose. Used for every climbing function, from sport routes to multipitch free routes, most people climb in a multipurpose harness. Top-end designs have belay/rappel loops, racking systems with at least three well-placed gear loops, offset buckles on the waistbelts, adjustable or elasticized rear risers, full padding, and weigh about one pound.

Sport/Competition. These harnesses are lightweight and allow great maneuverability. Most harnesses of this type have minimal frills, are made from narrow webbing and are scantily padded.

Big-wall/Aid. Here, comfort should be your main guide. You spend a lot of time belaying on wall climbs, so a belay/rappel loop is a necessity. Racking loops help prevent overly heavy shoulder slings. Harnesses with trim, uncluttered tie-in areas make attaching daisy chains easier.

Alpine. In alpine climbing, weight and simplicity are everything. Most alpine harnesses take an ascetic's approach by doing without heavy frills, such as padding. However, some have padded waistbelts, allowing for cross-over into rock climbing. Adjustable, removable leg loops allow you to put on the harness while wearing crampons or skis, or remain tied to the rope when you attend to nature or change layers of clothing.

TYING IN

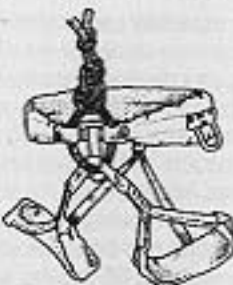
Check to see that the waistbelt is above your hips and that the webbing has been threaded through the buckle according to the manufacturer's recommendations.

Thread the rope through all tie-in points according to the manufacturer's directions; never tie in to the belay/rappel loop, equipment loops, or rear haul loop. Do not double (or coil) the rope through the tie-in points, as the friction generated will cause premature wear. Do not use the rear haul loop as an anchor point.

Develop a system for putting on and tying into your harness. For example, put on your harness, buckle the waist loop, thread the rope through all tie-in points, complete the knot, and back it up in the same sequence every time to avoid errors.

Concentrate on what you're doing—don't be distracted by a conversation with your partner and forget to finish your knot.

Finally, check the buckle and knots on your harness and your partner's harness frequently while climbing and belaying to make sure they are properly secure.



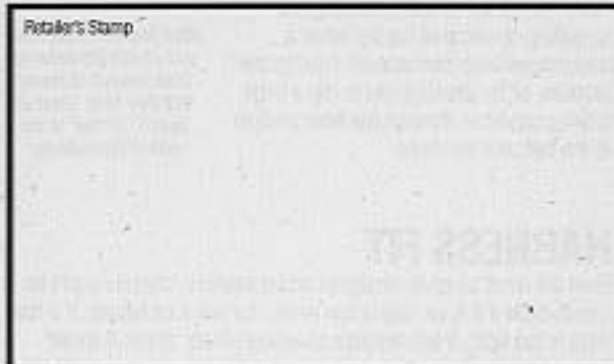
A properly tied harness.

THE CLIMBER'S CREDO

Climbing and mountaineering activities which include technical rock, snow, and ice climbing, back country skiing, and general mountaineering, combine many unique opportunities and choices to experience individual freedom and self-determination in our natural environment. An essential element of this expression of freedom through climbing and mountaineering is the acceptance of the many risks and dangers that are inherent in and integral to these activities.

The exercise of good judgment and common sense can help reduce the risks. The proper use of climbing equipment can also help reduce these risks. However, such risks and dangers cannot be totally eliminated, even with the proper use of climbing equipment. By the purchase and use of climbing equipment and your participation in climbing and mountaineering activities, you are personally accepting full responsibility for all of the inherent risks of these activities, including without limitation the risk of injury or death.

We recommend that you take the time to learn the proper use and limitations of each individual piece of climbing equipment. Obtain personal instruction from a qualified person well versed in the appropriate techniques that may help reduce the risks of these activities.



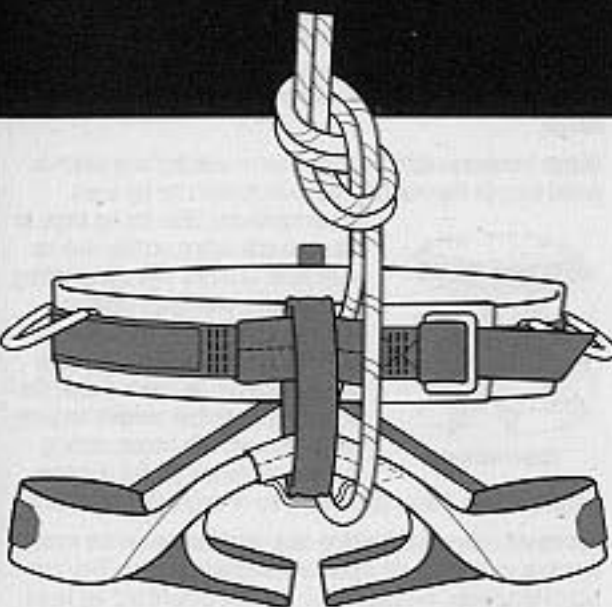
—REMEMBER—
YOUR SAFETY IS YOUR RESPONSIBILITY.



Climb Smart! is a public information program of the Climbing Sports Group, the trade association of the climbing industry (303) 444-3353.

Harnesses

Information for consumers on the design, use, maintenance and limitations of climbing harnesses.



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